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Before The
FEDERAL COMMUNICATIONS COMMISSION
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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of

Revision of the Commission's Rules to Ensure Compatibility with Enhanced 9-1-1 Emergency Calling Systems	)))	CC Docket No. 94-102 DA 98-1936

FURTHER COMMENTS OF BELL ATLANTIC MOBILE, INC.

Bell Atlantic Mobile, Inc. (BAM) submits this response to the Commission's request for comment on the recent proposal of the Ad Hoc Alliance for Public Access to 911, which advocates a revised "strongest signal" requirement for 911 calls made on cellular radiotelephone systems.[1] BAM is unable to support the Alliance's latest proposal, for three separate reasons.

1. The Alliance's new proposal does not address the problems with its previous "strongest signal proposal." The record of this proceeding has documented many technical obstacles and other concerns with mandating that all 911 calls be sent to the strongest signal. The record showed, for example, that such a requirement would place inappropriate reliance on cellular control channels (as

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1 Public Notice, "Additional Comment Sought, Wireless 911 "Strongest Signal" Proposal Filed by Ad Hoc Alliance for Public Access to 911," DA 98-1936, released September 22, 1998.

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opposed to voice channels) for determining which signal is "strongest," and would risk overloading of one provider's cell sites simply because they provide a stronger signal, even when service by the preferred carrier is in fact available. The record also explained how the initial proposal could impede deployment of caller location technologies.

These and other problems are not solved by the Alliance's latest proposal. The modified strongest signal requirement would still override a subscriber's choice of a preferred carrier, even when the subscriber can in fact access that carrier. In high-signal areas where there is line-of-site transmission to only one carrier's cell site, this could actually result in fewer 911 calls getting through, because most traffic would be sent to the carrier with the nearby cell, potentially overloading that cell. Worse, basing a transmission requirement on the strength of a forward control channel is ill-advised because a cell site may transmit a strong forward control channel even when voice channels are impaired or unavailable. The Alliance's new proposal, like its first proposal, would not advance the goal of access to 911 services because it does not deal with these problems.

2. The concept that the Commission can legislate a specific signal level as "inadequate" is technically incorrect and undesirable as a matter of policy. In non-line of site coverage areas, due to the fading characteristics of cellular radio signals, it is not possible to measure these signals without taking averages. When the caller is moving, signals could fade in a range of 40 dB over

time.[2] In order to get a sufficient sample of measurements to average that will reflect meaningful differences in signal strength from different cell sites, the signals need to be measured for a duration of one to five seconds per channel, depending on speed. There are 42 forward control channels, 21 on the A-side system and 21 on the B-side system. At one to five seconds per channel, it could take minutes before meaningful, accurate measurements could be taken for all 42 channels and the call sent to the non-preferred cellular carrier. Since the caller is moving, by the time all measurements are completed, conditions likely will have changed, making the switch to the other carrier unnecessary or even counterproductive. The concept that a phone should simply switch (or must switch) to the non-preferred cellular carrier immediately upon a reading of -80 dB is thus invalid.

Even with stationary calls, the concept of an immediate calculation of "inadequate" signal does not work. There are four signals involved in a cellular call: forward control channel, reverse control channel, forward voice channel and reverse voice channel. These channels all operate at different frequencies. At any given moment and location these frequencies can vary among each other by as much as 40 dB in strength due to multipath fading, exhibited as "frequency selective fading," as is recognized in the Trott Report. Again, signal strength of the forward control channel measured at the cell phone is not a good indicator of call quality, since the voice channels use different frequencies.

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2 William C.Y. Lee, Mobile Cellular Telecommunication Systems, at 12.

Instantaneous readings of signal strength vary too much to be of value. While the Trott report acknowledges that multiple channels are used in cellular call set up and completion, neither that report nor the Alliance's proposal accounts for that fact in proposing an "inadequate signal" standard. This is a serious deficiency in the proposal. Measuring only the signal strength of the frequency used for the call set-up channel ignores the variations in strength among the different frequencies used in a cellular call, and also ignores the fact that the strength of even a single frequency changes.

The Alliance's proposal also places unnecessary and potentially dangerous reliance on the availability of the alternative system. It presumes that the alternative system is operating at full service levels. In a weather-related emergency or disaster scenario, however, the alternative system's cell sites may have reduced capacity or their operations may be impaired even though forward control channels are operating. Forcing all calls from an area to be sent to that alternative carrier would risk cell site overload and blocking of 911 calls. Today, calls are routed to the carrier serving the particular caller. If the call can go through, there is no reason to mandate that the call be rerouted to another carrier. If the call cannot go through, this situation can be addressed by BAM's and other parties' proposals (discussed below) to have phones programmed to search for an alternative carrier.

3. Any further Commission action cannot be confined to cellular systems but must also address PCS and other CMRS systems. The Alliance's

latest proposal, like its earlier proposal, addresses only analog cellular services. The Commission has, however, emphasized the public interest benefits of universal access by all wireless callers to 911 services. That policy goal mandates that any new rules apply not only to analog cellular systems (as does the Alliance's proposal) but to all other mobile services offered to the public. As digital PCS and other technologies expand to serve a steadily growing portion of the public, any further rulemaking regarding 911 must encompass them as well. Although BAM has noted this concern in previous rounds of comment in this proceeding, the Commission's Public Notice does not acknowledge the importance of adopting symmetrical and consistent 911 requirements for all public mobile service providers.

BAM's proposal achieves the right result without the problems created by the Alliance's proposal. On June 21, 1998, in a written ex parte presentation, BAM advanced an alternative solution which would encourage one-button access to 911 service. In this approach, wireless 911 calls will be handled by the subscriber's carrier, except where the mobile handset cannot access that carrier or where the quality of the voice communication is unsatisfactory to the subscriber. Where the handset cannot set up the call at all, the phone would be programmed to search for an alternative carrier. If call set-up is accomplished on the subscriber's carrier, but the voice quality is inferior, the subscriber would be able to press the 911 button and the mobile handset will automatically complete the call on the non-preferred system. At least one manufacturer has developed handsets which have similar capabilities.

BAM's solution will provide increased assurance of access to emergency help, because it will enable callers to have access to a "back up" carrier when they cannot access their preferred carrier or the service is too poor to communicate with the PSAP. In short, it provides an alternative where, but only where, an alternative is truly needed. This solution also has the advantage of working on both analog and digital cellular systems. It will not, however, cause the serious problems that are endemic to the Alliance's various "strongest signal" proposals.

Prior to communicating this solution to the Commission on June 21, 1998, BAM discussed it with representatives of the Alliance, but has received no response. If the Commission determines that it should take further action in this proceeding, BAM urges that it adopt this solution, because it will promote the goal of wider access to emergency assistance but avoid the inevitable problems with a "strongest signal" requirement.

Respectfully submitted,

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